

EMC TEST REPORT For

SHENZHEN LEADSHINE TECHNOLOGY CO., LTD.

The IO motion control card

Model No.: IOC-0640

Prepared for : SHENZHEN LEADSHINE TECHNOLOGY CO., LTD.
Address : Floor 8, Block 2, Nanyou Tian'an Industrial Park, Nanshan
District, Shenzhen City, Guangdong Province, China

Prepared by : SHENZHEN EMTEK CO., LTD.
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Report Number : ES130910077E
Date of Test : September 10, 2013 to September 26, 2013
Date of Report : September 26, 2013

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TEST REPORT DESCRIPTION

Applicant : SHENZHEN LEADSHINE TECHNOLOGY CO., LTD.
Manufacturer : SHENZHEN LEADSHINE TECHNOLOGY CO., LTD.
Trade Mark : 
EUT : The IO motion control card
Model No. : IOC-0640

Measurement Procedure Used:

EN 61000-6-3:2007+A1:2011
EN 61000-3-2: 2006+A1: 2009+A2: 2009
EN 61000-3-3: 2008
EN 61000-6-1:2007
(IEC 61000-4-2:2008, IEC 61000-4-3:2006+A1:2007+A2:2010, IEC61000-4-4:2012, IEC 61000-4-5:2005, IEC 61000-4-6:2008, IEC 61000-4-8:2009, IEC 61000-4-11:2004)

The device described above is tested by SHENZHEN EMTEK CO., LTD. to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and SHENZHEN EMTEK CO., LTD. is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the EN61000-6-3, EN61000-3-2, EN61000-3-3 and EN61000-6-1 requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of SHENZHEN EMTEK CO., LTD.

Date of Test : September 10, 2013 to September 26, 2013

Prepared by : 
Lesley Zhang/Editor

Reviewer : 
King Wang/Supervisor

Approved & Authorized Signer : 
Lisa Wang/Manager



Modified History

| Rev. | Summary | Date of Rev. | Report No. |
|------|-----------------|--------------|--------------|
| V1.0 | Original Report | 2013-09-26 | ES130910077E |

1. SUMMARY OF TEST RESULT

| EMISSION | | | |
|--|---------------------------------------|----------------------|---------|
| Description of Test Item | Standard | Limits | Results |
| Conducted Disturbance at Mains Terminals | EN 61000-6-3:2007+A1:2011 | -- | Pass |
| Radiated Disturbance | EN 61000-6-3:2007+A1:2011 | -- | Pass |
| Harmonic Current Emissions | EN 61000-3-2: 2006 +A1: 2009+A2: 2009 | Class A | N/A |
| Voltage Fluctuation and Flicker | EN 61000-3-3: 2008 | Section 5 | Pass |
| IMMUNITY (EN 61000-6-1:2007) | | | |
| Description of Test Item | Basic Standard | Performance Criteria | Results |
| Electrostatic Discharge (ESD) | IEC 61000-4-2:2008 | B | Pass |
| Radio-Frequency, Continuous Radiated Disturbance | IEC 61000-4-3:2006+A1:2007 +A2:2010 | A | Pass |
| EFT/B Immunity | IEC61000-4-4:2012 | B | Pass |
| Surge Immunity | IEC 61000-4-5:2005 | B | Pass |
| Conducted RF Immunity | IEC 61000-4-6:2008 | A | Pass |
| Power Frequency Magnetic Field | IEC 61000-4-8:2009 | A | Pass |
| Voltage Dips, >95% Reduction | IEC 61000-4-11:2004 | B | Pass |
| Voltage Dips, 30% Reduction | | C | Pass |
| Voltage Interruptions | | C | Pass |
| Note: N/A is an abbreviation for Not Applicable. | | | |

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT : The IO motion control card

Model Number : IOC-0640

Test Voltage : AC 230V/50Hz

Applicant : SHENZHEN LEADSHINE TECHNOLOGY CO., LTD.

Address : Floor 8, Block 2, Nanyou Tian'an Industrial Park, Nanshan District, Shenzhen City, Guangdong Province, China

Manufacturer : SHENZHEN LEADSHINE TECHNOLOGY CO., LTD.

Address : Floor 8, Block 2, Nanyou Tian'an Industrial Park, Nanshan District, Shenzhen City, Guangdong Province, China

Date of Received : September 10, 2013

Date of Test : September 10, 2013 to September 26, 2013

2.2. Description of Test Facility

Site Description
EMC Lab. : Accredited by CNAS, 2010.10.29
The certificate is valid until 2013.10.28
The Laboratory has been assessed and proved to be in compliance with CNAS-CL01:2006 (identical to ISO/IEC 17025:2005)
The Certificate Registration Number is L2291.

Accredited by TUV Rheinland Shenzhen 2010.5.25
The Laboratory has been assessed according to the requirements ISO/IEC 17025.

Accredited by FCC, April 17, 2013
The Certificate Registration Number is 406365.

Accredited by Industry Canada, November 15, 2010
The Certificate Registration Number is 46405-4480.

Name of Firm : SHENZHEN EMTEK CO., LTD.
Site Location : Bldg 69, Majialong Industry Zone, Nanshan District, Shenzhen, Guangdong, China

2. GENERAL INFORMATION

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EUT : The IO motion control card

Model Number : IOC-0640

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Applicant : SHENZHEN LEADSHINE TECHNOLOGY CO., LTD.

Address : Floor 8, Block 2, Nanyou Tian'an Industrial Park, Nanshan District, Shenzhen City, Guangdong Province, China

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Name of Firm : SHENZHEN EMTEK CO., LTD.
Site Location : Bldg 69, Majialong Industry Zone, Nanshan District, Shenzhen, Guangdong, China

3. MEASURING DEVICE AND TEST EQUIPMENT

3.1. For Power Line Conducted Emission Measurement

| Used | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|-------------------------------------|--------------------|-----------------|---------------|------------|--------------|---------------|
| <input checked="" type="checkbox"/> | Test Receiver | Rohde & Schwarz | ESCS30 | 100162 | May 29, 2013 | 1 Year |
| <input checked="" type="checkbox"/> | L.I.S.N. | Rohde & Schwarz | ENV216 | 101161 | May 29, 2013 | 1 Year |
| <input checked="" type="checkbox"/> | 50Ω Coaxial Switch | Anritsu | MP59B | 6100214550 | N/A | N/A |
| <input type="checkbox"/> | Voltage Probe | Rohde & Schwarz | TK9416 | N/A | May 29, 2013 | 1 Year |
| <input type="checkbox"/> | I.S.N | Teseq GmbH | ISN T800 | 30327 | May 29, 2013 | 1 Year |
| <input type="checkbox"/> | LCL adaoter | Teseq GmbH | ADT800-Cat .5 | 30327.01 | May 29, 2013 | 1 Year |
| <input type="checkbox"/> | LCL adaoter | Teseq GmbH | ADT800-Cat .3 | 30327.02 | May 29, 2013 | 1 Year |
| <input type="checkbox"/> | LCL adaoter | Teseq GmbH | ADT800-R | 30327.02 | May 29, 2013 | 1 Year |

3.2. For Radiated Emission Measurement

| Used | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|-------------------------------------|-------------------|-----------------|-----------|--------------|--------------|---------------|
| <input checked="" type="checkbox"/> | EMI Test Receiver | Rohde & Schwarz | ESU | 1302.6005.26 | May 29, 2013 | 1 Year |
| <input checked="" type="checkbox"/> | Pre-Amplifier | HP | 8447D | 2944A07999 | May 29, 2013 | 1 Year |
| <input checked="" type="checkbox"/> | Bilog Antenna | Schwarzbeck | VULB9163 | 142 | May 29, 2013 | 1 Year |
| <input type="checkbox"/> | Loop Antenna | Schwarzbeck | FMZB 1519 | 012 | May 29, 2013 | 1 Year |
| <input type="checkbox"/> | Horn Antenna | Schwarzbeck | BBHA 9170 | BBHA9170399 | May 29, 2013 | 1 Year |
| <input type="checkbox"/> | Horn Antenna | Schwarzbeck | BBHA 9120 | D143 | May 29, 2013 | 1 Year |
| <input checked="" type="checkbox"/> | Cable | Schwarzbeck | AK9513 | ACRX1 | May 29, 2013 | 1 Year |
| <input checked="" type="checkbox"/> | Cable | Rosenberger | N/A | FP2RX2 | May 29, 2013 | 1 Year |
| <input checked="" type="checkbox"/> | Cable | Schwarzbeck | AK9513 | CRPX1 | May 29, 2013 | 1 Year |
| <input checked="" type="checkbox"/> | Cable | Schwarzbeck | AK9513 | CRRX2 | May 29, 2013 | 1 Year |
| <input type="checkbox"/> | Pre-Amplifier | A.H. | PAM-0126 | 1415261 | May 29, 2013 | 1 Year |

3.3. For Harmonic Current / Flicker Measurement

| Used | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|-------------------------------------|----------------------------------|---------------|--------------------|------------|----------------|---------------|
| <input checked="" type="checkbox"/> | 45KVA AC Power source | Teseq | NSG 1007-45/45K VA | 1305A02873 | April 25, 2013 | 1 Year |
| <input checked="" type="checkbox"/> | Signal conditioning Unit | Teseq | CCN 1000-3 | 1305A02873 | April 25, 2013 | 1 Year |
| <input type="checkbox"/> | Three phase impedance network | Teseq/Germany | INA2197/37A | 1305A02873 | April 25, 2013 | 1 Year |
| <input checked="" type="checkbox"/> | Three phase impedance network | Teseq/Germany | INA 2196/75A | 1305A02874 | April 25, 2013 | 1 Year |
| <input type="checkbox"/> | Proffline 2100 AC Switching Unit | Teseq/Germany | NSG2200-3 | A22714 | April 25, 2013 | 1 Year |

3.4. For Electrostatic Discharge Immunity Test

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|-------------------------------------|----------------|--------------|--------------------------|--------------|--------------|---------------|
| <input checked="" type="checkbox"/> | ESD Tester | TESEQ AG | NSG 438A | 130 | May 29, 2013 | 1 Year |
| <input checked="" type="checkbox"/> | Impulse Module | TESEQ AG | INA 4380-150pF/330Ohm | 403-550/1712 | May 29, 2013 | 1 Year |

3.5. For RF Strength Susceptibility Test(Below 2GHz)

| Used | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|-------------------------------------|------------------------------|--------------|---------------|-------------|--------------|---------------|
| <input checked="" type="checkbox"/> | RF Power Meter. Dual Channel | BOONTON | 4232A | 10539 | May 29, 2013 | 1 Year |
| <input checked="" type="checkbox"/> | 50ohm Diode Power Sensor | BOONTON | 51011EMC | 34236/34238 | May 29, 2013 | 1 Year |
| <input checked="" type="checkbox"/> | Broad-Band Horn Antenna | SCHWARZBECK | BBHA 9120 L3F | 332 | May 29, 2013 | 1 Year |
| <input checked="" type="checkbox"/> | Power Amplifier | PRANA | AP32MT215 | N/A | May 29, 2013 | 1 Year |
| <input type="checkbox"/> | Power Amplifier | MILMEGA | AS0102-55 | N/A | May 29, 2013 | 1 Year |
| <input type="checkbox"/> | Signal Generator | AEROFLEX | 2023B | N/A | May 29, 2013 | 1 Year |
| <input type="checkbox"/> | Field Strength Meter | HOLADAY | HI-6005 | N/A | May 29, 2013 | 1 Year |
| <input type="checkbox"/> | RS232 Fiber Optic Modem | HOLADAY | HI-4413P | N/A | May 29, 2013 | 1 Year |
| <input type="checkbox"/> | Log.-Per. Antenna | SCHWARZBECK | VULP 9118E | N/A | May 29, 2013 | 1 Year |

3.6. For RF Strength Susceptibility Test (Above 2GHz) For SMQ

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal.. | Cal. Interval |
|-------------------------------------|--------------------------|--------------|-----------|------------|------------|---------------|
| <input checked="" type="checkbox"/> | Signal Generator | IFR-Aeroflex | 2032 | 203002/100 | 2012/11 | 1 Year |
| <input checked="" type="checkbox"/> | Power Amplifier | AR | 25S1G4A | 0325511 | 2012/11 | 1 Year |
| <input checked="" type="checkbox"/> | Antenna | AR | AT4002A | 0324848 | 2012/11 | 1 Year |
| <input checked="" type="checkbox"/> | Filed Monitor | AR | FM5004 | N/A | 2012/11 | 1 Year |
| <input type="checkbox"/> | Power Head | AR | PH2000 | 301193 | 2012/11 | 1 Year |
| <input type="checkbox"/> | Power Meter | AR | PM2002 | 302799 | 2012/11 | 1 Year |
| <input checked="" type="checkbox"/> | Dual Directional Coupler | AR | DC7144A | 0325100 | 2012/11 | 1 Year |

3.7. For Electrical Fast Transient / Burst Immunity Test

| Used | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|-------------------------------------|----------------|--------------|-----------|------------|--------------|---------------|
| <input checked="" type="checkbox"/> | Burst Tester | HAEFELY | PEFT4010 | 080981-16 | May 29, 2013 | 1 Year |
| <input type="checkbox"/> | Coupling Clamp | HAEFELY | IP-4A | 147147 | May 29, 2013 | 1 Year |

3.8.For Surge Immunity Test

| Used | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|-------------------------------------|----------------------------|--------------|-------------|------------|--------------|---------------|
| <input checked="" type="checkbox"/> | Surge Controller | HAEFELY | Psurge 8000 | 174031 | May 29, 2013 | 1 Year |
| <input checked="" type="checkbox"/> | Impulse Module | HAEFELY | PIM 100 | 174124 | May 29, 2013 | 1 Year |
| <input type="checkbox"/> | Coupling Decoupling Filter | HAEFELY | PCD 130 | 172181 | May 29, 2013 | 1 Year |
| <input type="checkbox"/> | Coupling Module | HAEFELY | PCD122 | 174354 | May 29, 2013 | 1 Year |
| <input checked="" type="checkbox"/> | Surge Impulse Module | HAEFELY | PIM 120 | 174435 | May 29, 2013 | 1 Year |
| <input type="checkbox"/> | Coupling Module | HAEFELY | PCD 126A | 174387 | May 29, 2013 | 1 Year |
| <input type="checkbox"/> | Impulse Module | HAEFELY | PIM 110 | 174391 | May 29, 2013 | 1 Year |

3.9.For Injected Current Susceptibility Test

| Used | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|-------------------------------------|-----------------|--------------|-------------|------------|--------------|---------------|
| <input checked="" type="checkbox"/> | Simulator | EMTEST | CWS500C | 0900-12 | May 29, 2013 | 1 Year |
| <input type="checkbox"/> | CDN | EMTEST | CDN-M2 | 5100100100 | May 29, 2013 | 1 Year |
| <input checked="" type="checkbox"/> | CDN | EMTEST | CDN-M3 | 0900-11 | May 29, 2013 | 1 Year |
| <input type="checkbox"/> | Injection Clamp | EMTEST | F-2031-23MM | 368 | May 29, 2013 | 1 Year |
| <input checked="" type="checkbox"/> | Attenuator | EMTEST | ATT6 | 0010222A | May 29, 2013 | 1 Year |

3.10.For Magnetic Field Immunity Test

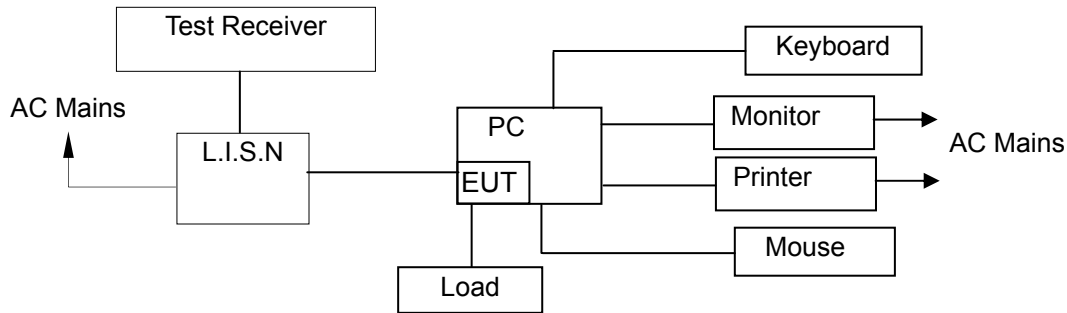
| Used | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|-------------------------------------|-----------------------|--------------|-----------|------------|--------------|---------------|
| <input checked="" type="checkbox"/> | Magnetic Field Tester | HAEFELY | MAG100 | 250040.1 | May 29, 2013 | 1 Year |

3.11.For Voltage Dips and Interruptions Test

| Used | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|-------------------------------------|--------------------------------|---------------|----------------------|------------|----------------|---------------|
| <input checked="" type="checkbox"/> | 45KVA AC Power source | Teseq | NSG 1007-45/45KVA | 1305A02873 | April 25, 2013 | 1 Year |
| <input type="checkbox"/> | Signal conditioning Unit | Teseq | CCN 1000-3 | 1305A02873 | April 25, 2013 | 1 Year |
| <input type="checkbox"/> | Three phase impedance network | Teseq/Germany | INA2197/37A | 1305A02873 | April 25, 2013 | 1 Year |
| <input type="checkbox"/> | Three phase impedance network | Teseq/Germany | INA 2196/75A | 1305A02874 | April 25, 2013 | 1 Year |
| <input checked="" type="checkbox"/> | Proflin 2100 AC Switching Unit | Teseq/Germany | NSG2200-3 | A22714 | April 25, 2013 | 1 Year |

4. POWER LINE CONDUCTED EMISSION MEASUREMENT

4.1. Block Diagram of Test Setup



(EUT: The IO motion control card)

4.2. Measuring Standard

EN 61000-6-3:2007+A1:2011

4.3. Power Line Conducted Emission Limits

| Frequency (MHz) | Limit (dB μ V) | |
|-----------------|--------------------|---------------|
| | Quasi-peak Level | Average Level |
| 0.15 ~ 0.50 | 66.0 ~ 56.0 * | 56.0 ~ 46.0 * |
| 0.50 ~ 5.00 | 56.0 | 46.0 |
| 5.00 ~ 30.00 | 60.0 | 50.0 |

NOTE1-The lower limit shall apply at the transition frequencies.
 NOTE2-The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.

4.4. EUT Configuration on Measurement

The following equipments are installed on Conducted Emission Measurement to meet EN 61000-6-3 requirements and operating in a manner which tends to maximize its emission characteristics in a normal application.

EUT : The IO motion control card
 Model Number : IOC-0640

4.5. Operating Condition of EUT

- 4.5.1. Setup the EUT as shown on Section 4.1.
- 4.5.2. Turn on the power of all equipments.
- 4.5.3. Let the EUT work in measuring mode (ON) and measure it.

4.6. Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and connected to the AC mains through Line Impedance Stability Network (L.I.S.N). This provided a 50ohm coupling impedance for the tested equipments. Both sides of AC line are investigated to find out the maximum conducted emission according to the EN61000-6-3 regulations during conducted emission measurement.

The bandwidth of the field strength meter (R&S Test Receiver ESCS30) is set at 9kHz in 150kHz~30MHz and 200Hz in 9kHz~150kHz.

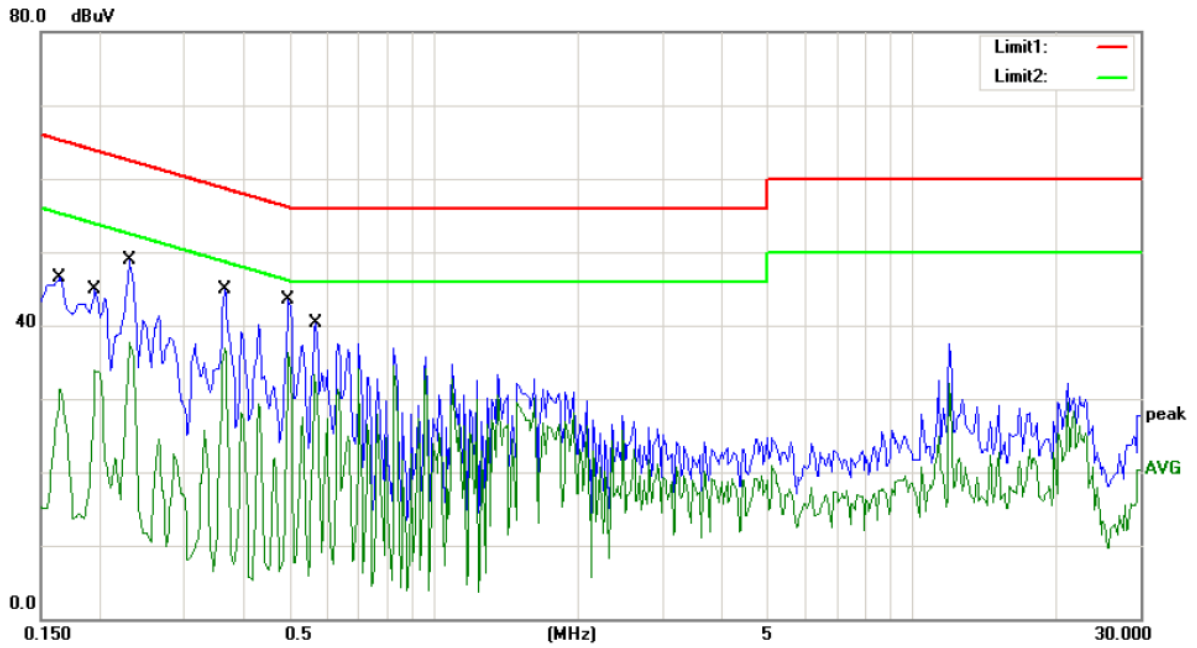
The frequency range from 150kHz to 30MHz is investigated.

All the scanning waveform is put in the following pages.

4.7. Measuring Results

PASS.

Please reference to the following pages.



Site Conduction #1

Phase: **L1**

Temperature: 24

Limit: (CE)EN61000-6-3_QP

Power: 230V/50Hz

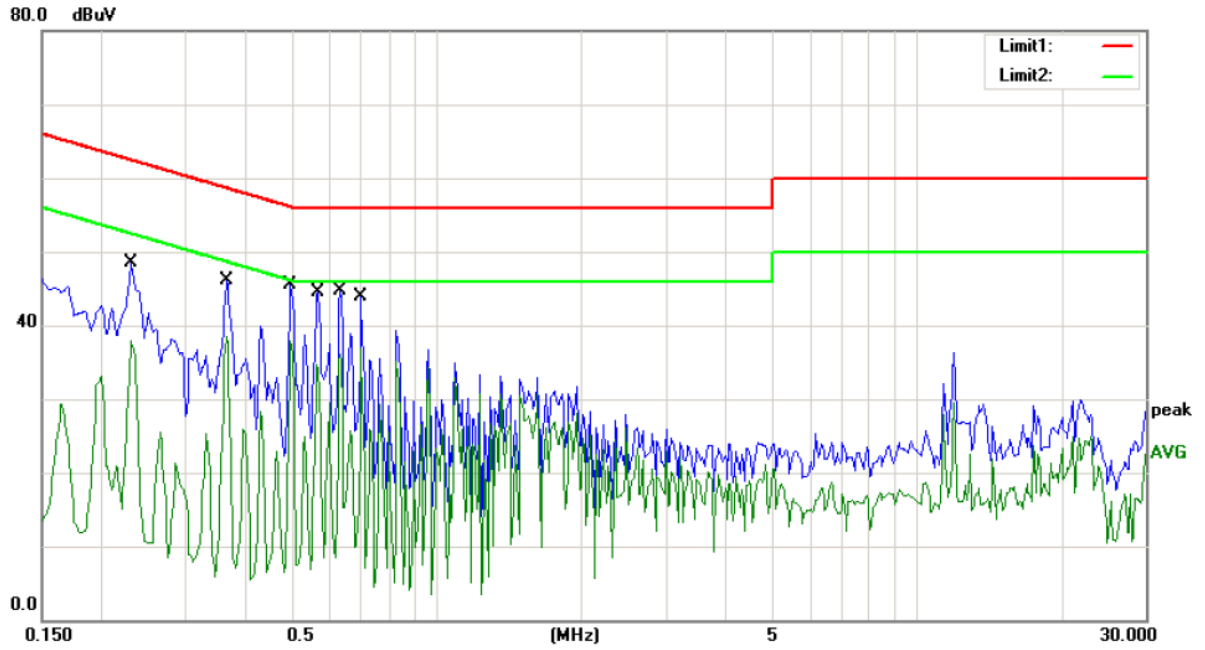
Humidity: 53 %

Mode: ON

Note:

| No. Mk. | Freq. MHz | Reading Level dBuV | Correct Factor dB | Measure- ment dBuV | Limit dBuV | Over dB | Detector | Comment |
|---------|--------------|--------------------------|-------------------------|--------------------------|---------------|------------|----------|---------|
| 1 | 0.1650 | 46.52 | 0.00 | 46.52 | 65.21 | -18.69 | QP | |
| 2 | 0.1650 | 31.22 | 0.00 | 31.22 | 55.21 | -23.99 | AVG | |
| 3 | 0.1950 | 44.98 | 0.00 | 44.98 | 63.82 | -18.84 | QP | |
| 4 | 0.1950 | 33.82 | 0.00 | 33.82 | 53.82 | -20.00 | AVG | |
| 5 | 0.2300 | 48.89 | 0.00 | 48.89 | 62.45 | -13.56 | QP | |
| 6 | 0.2300 | 37.77 | 0.00 | 37.77 | 52.45 | -14.68 | AVG | |
| 7 | 0.3650 | 44.83 | 0.00 | 44.83 | 58.61 | -13.78 | QP | |
| 8 | 0.3650 | 37.00 | 0.00 | 37.00 | 48.61 | -11.61 | AVG | |
| 9 | 0.4950 | 43.46 | 0.00 | 43.46 | 56.08 | -12.62 | QP | |
| 10 * | 0.4950 | 36.23 | 0.00 | 36.23 | 46.08 | -9.85 | AVG | |
| 11 | 0.5650 | 40.28 | 0.00 | 40.28 | 56.00 | -15.72 | QP | |
| 12 | 0.5650 | 33.26 | 0.00 | 33.26 | 46.00 | -12.74 | AVG | |

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: ZHL



Site Conduction #1

Phase: **N**

Temperature: 24

Limit: (CE)EN61000-6-3_QP

Power: 230V/50Hz

Humidity: 53 %

Mode: ON

Note:

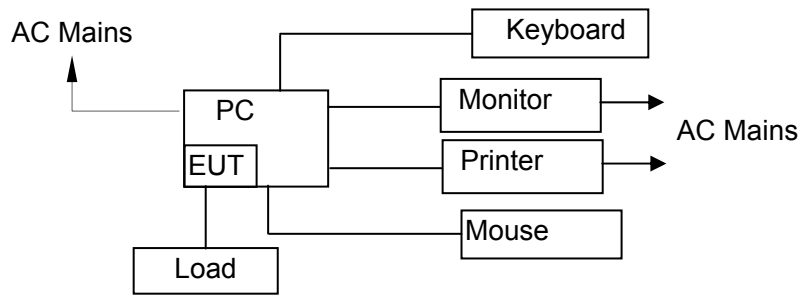
| No. Mk. | Freq. MHz | Reading Level dBuV | Correct Factor dB | Measure- ment dBuV | Limit dBuV | Over dB | Detector | Comment |
|---------|--------------|--------------------------|-------------------------|--------------------------|---------------|------------|----------|---------|
| 1 | 0.2300 | 48.51 | 0.00 | 48.51 | 62.45 | -13.94 | QP | |
| 2 | 0.2300 | 37.22 | 0.00 | 37.22 | 52.45 | -15.23 | AVG | |
| 3 | 0.3650 | 46.05 | 0.00 | 46.05 | 58.61 | -12.56 | QP | |
| 4 | 0.3650 | 38.44 | 0.00 | 38.44 | 48.61 | -10.17 | AVG | |
| 5 | 0.4950 | 45.40 | 0.00 | 45.40 | 56.08 | -10.68 | QP | |
| 6 * | 0.4950 | 38.00 | 0.00 | 38.00 | 46.08 | -8.08 | AVG | |
| 7 | 0.5650 | 44.47 | 0.00 | 44.47 | 56.00 | -11.53 | QP | |
| 8 | 0.5650 | 34.62 | 0.00 | 34.62 | 46.00 | -11.38 | AVG | |
| 9 | 0.6300 | 44.62 | 0.00 | 44.62 | 56.00 | -11.38 | QP | |
| 10 | 0.6300 | 36.05 | 0.00 | 36.05 | 46.00 | -9.95 | AVG | |
| 11 | 0.6950 | 43.94 | 0.00 | 43.94 | 56.00 | -12.06 | QP | |
| 12 | 0.6950 | 36.90 | 0.00 | 36.90 | 46.00 | -9.10 | AVG | |

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: ZHL

5. RADIATED EMISSION MEASUREMENT

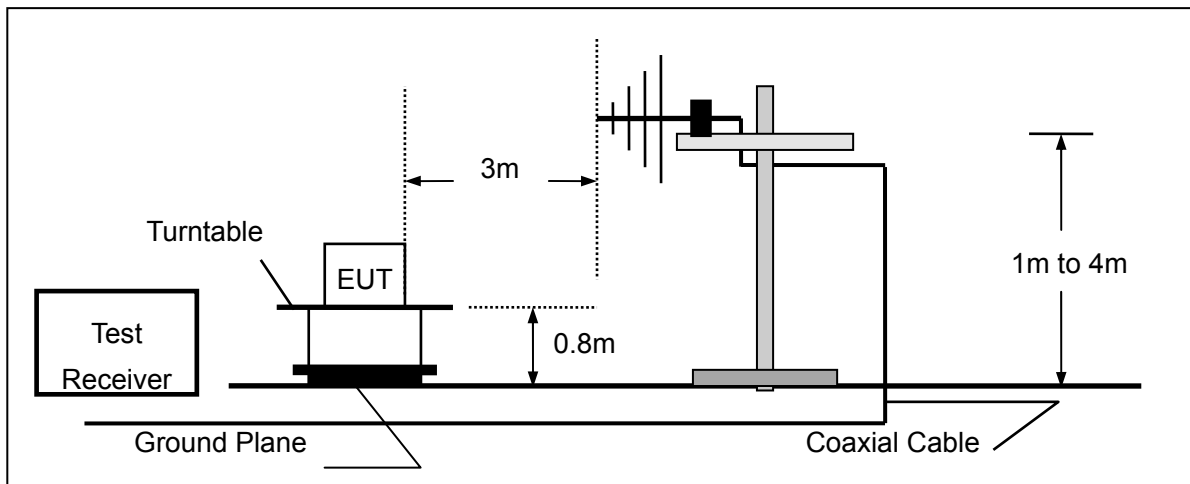
5.1. Block Diagram of Test Setup

5.1.1. Block diagram of connection between the EUT and simulators



(EUT: The IO motion control card)

5.1.2. Block diagram of test setup (In chamber)



(EUT: The IO motion control card)

5.2. Measuring Standard

EN 61000-6-3:2007+A1:2011

5.3. Radiated Emission Limits

| FREQUENCY (MHz) | DISTANCE (Meters) | FIELD STRENGTHS LIMIT (dB μ V/m) |
|-----------------|-------------------|--------------------------------------|
| 30 ~ 230 | 3 | 40 |
| 230 ~ 1000 | 3 | 47 |

Note: (1) The smaller limit shall apply at the combination point between two frequency bands.
 (2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.

5.4. EUT Configuration on Measurement

The EN 61000-6-3 regulations test method must be used to find the maximum emission during radiated emission measurement.

EUT : The IO motion control card
Model Number : IOC-0640

5.5. Operating Condition of EUT

5.5.1. Setup the EUT as shown on Section 5.1.

5.5.2. Turn on the power of all equipments.

5.5.3. Let the EUT work in measuring mode (ON) and measure it.

5.6. Test Procedure

The EUT is placed on a turntable which is 0.8 meter high above the ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna that is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Bilog antenna (calibrated by Dipole Antenna) is used as a receiving antenna. Both horizontal and vertical polarization of the antenna is set on test.

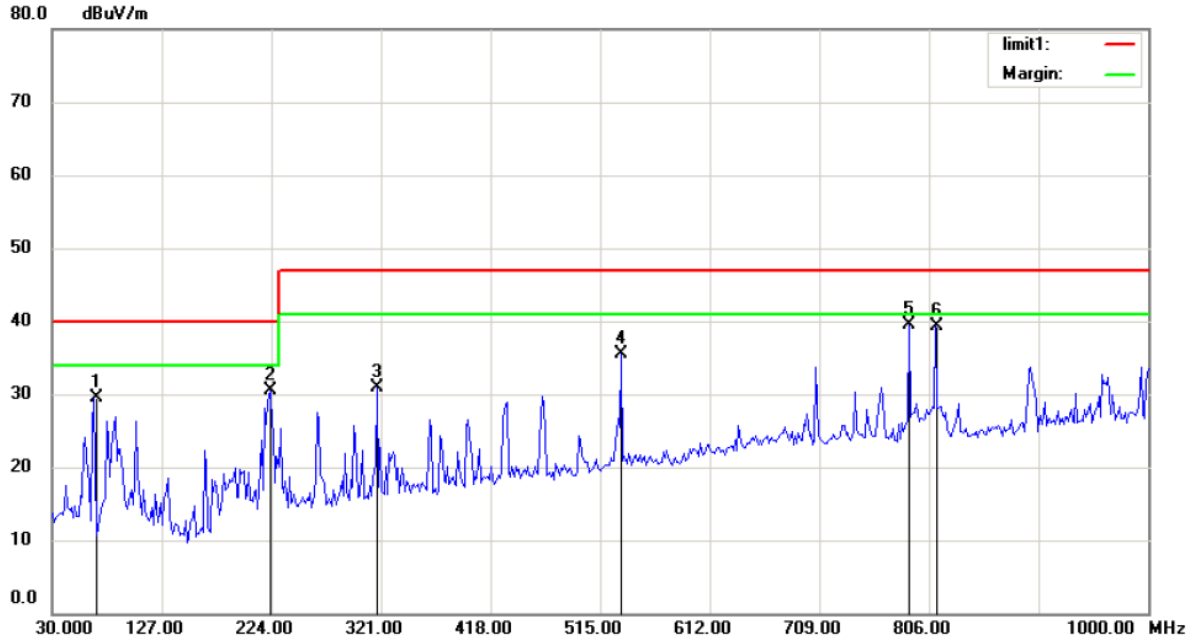
The bandwidth of the Receiver (ESCI) is set at 120kHz.
All the scanning curves are attached in the following pages.

5.7. Measuring Results

PASS.

The frequency range from 30MHz to 1000MHz is investigated.

Please reference to the following pages.

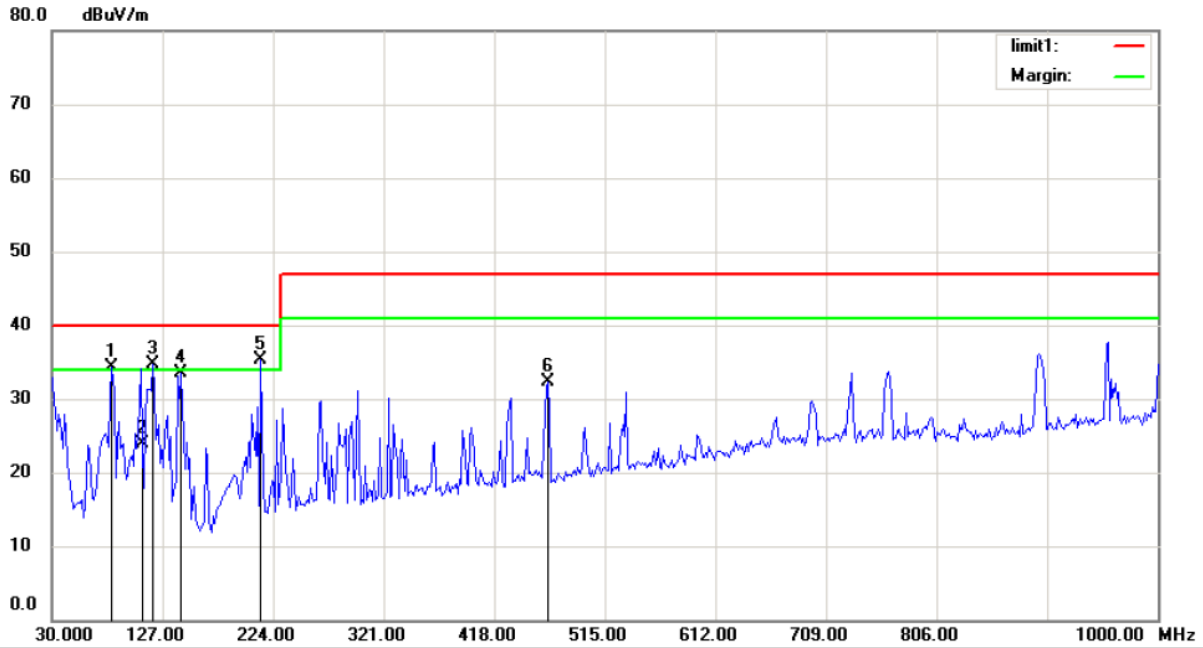


Site site #1 Polarization: **Horizontal** Temperature: 24
 Limit: (RE)EN 61000-6-3 Power: 230V/50Hz Humidity: 53 %
 Mode:ON
 Note:

| No. | Mk. | Freq. MHz | Reading Level dBuV | Correct Factor dB | Measure- ment dBuV/m | Limit dBuV/m | Over dB | Antenna Height cm | Table Degree degree | Comment |
|-----|-----|--------------|--------------------------|-------------------------|----------------------------|-----------------|------------|-------------------------|---------------------------|---------|
| 1 | | 67.3077 | 18.93 | 10.57 | 29.50 | 40.00 | -10.50 | QP | | |
| 2 | | 222.7564 | 16.57 | 13.86 | 30.43 | 40.00 | -9.57 | QP | | |
| 3 | | 317.5801 | 14.25 | 16.64 | 30.89 | 47.00 | -16.11 | QP | | |
| 4 | | 533.6538 | 14.25 | 21.21 | 35.46 | 47.00 | -11.54 | QP | | |
| 5 | * | 788.5897 | 15.46 | 24.13 | 39.59 | 47.00 | -7.41 | QP | | |
| 6 | | 811.9071 | 14.73 | 24.57 | 39.30 | 47.00 | -7.70 | QP | | |

*:Maximum data x:Over limit !:over margin

Operator: feng



Site site #1 Polarization: **Vertical** Temperature: 24
 Limit: (RE)EN 61000-6-3 Power: 230V/50Hz Humidity: 53 %
 Mode:ON
 Note:

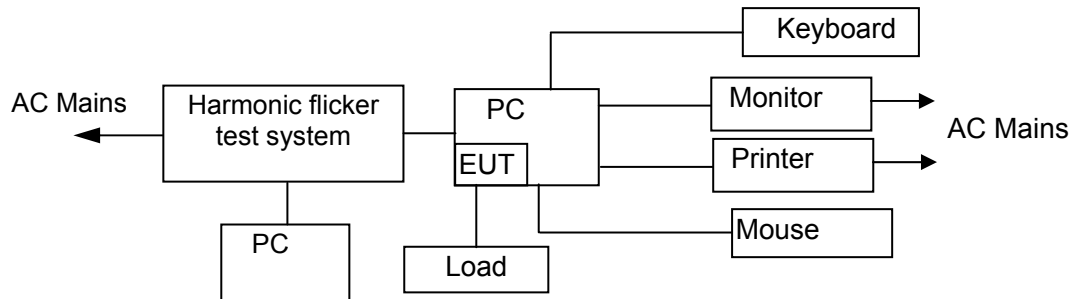
| No. | Mk. | Freq. | Reading Level | Correct Factor | Measurement | Limit | Over | Antenna Height | Table Degree | |
|-----|-----|----------|---------------|----------------|-------------|--------|--------|----------------|--------------|---------|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | cm | degree | Comment |
| 1 | ! | 82.8525 | 23.86 | 10.53 | 34.39 | 40.00 | -5.61 | QP | | |
| 2 | | 107.7244 | 10.30 | 13.65 | 23.95 | 40.00 | -16.05 | QP | | |
| 3 | ! | 118.6057 | 21.88 | 12.85 | 34.73 | 40.00 | -5.27 | QP | | |
| 4 | | 143.4775 | 22.89 | 10.62 | 33.51 | 40.00 | -6.49 | QP | | |
| 5 | * | 213.4294 | 21.83 | 13.53 | 35.36 | 40.00 | -4.64 | QP | | |
| 6 | | 465.2564 | 12.74 | 19.61 | 32.35 | 47.00 | -14.65 | QP | | |

*:Maximum data x:Over limit !:over margin

Operator: feng

6. HARMONIC CURRENT EMISSION MEASUREMENT

6.1. Block Diagram of Test Setup



(EUT: The IO motion control card)

6.2. Measuring Standard

EN 61000-3-2: 2006+A1: 2009+A2: 2009 CLASS A

6.3. Operation Condition of EUT

- 6.3.1. Setup the EUT as shown on Section 6.1.
- 6.3.2. Turn on the power of all equipments.
- 6.3.3. Let the EUT work in measuring mode (ON) and measure it.

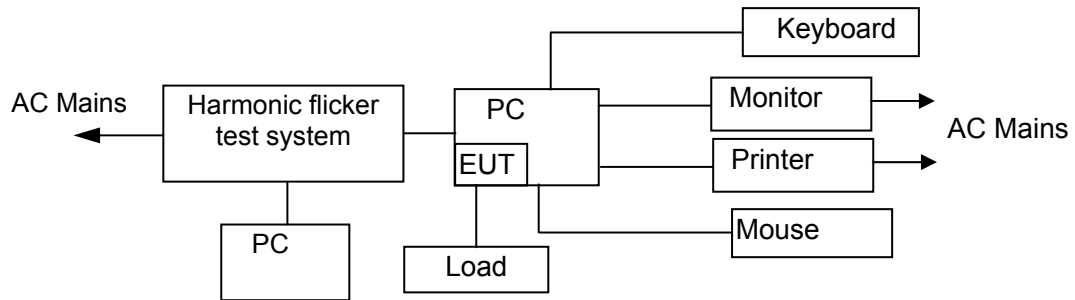
6.4. Measuring Results

Not Applicable.

Because power of EUT less than 75W, According standard EN 61000-3-2, Harmonic current unnecessary to test.

7. VOLTAGE FLUCTUATION AND FLICKER MEASUREMENT

7.1. Block Diagram of Test Setup



(EUT: The IO motion control card)

7.2. Measuring Standard

EN 61000-3-3: 2008

7.3. Operation Condition of EUT

- 7.3.1. Me Setup the EUT as shown on Section 7.1.
- 7.3.2. Turn on the power of all equipments.
- 7.3.3. Let the EUT work in measuring mode (ON) and measure it.

7.4. Measuring Results

PASS.

Please see the attached page.

8. IMMUNITY PERFORMANCE CRITERIA DESCRIPTION

Performance Level

The test results shall be classified in terms of the loss of function or degradation of performance of the equipment under test, relative to a performance level by its manufacturer or the requestor of the test, or the agreed between the manufacturer and the purchaser of the product.

Definition related to the performance level:

1. Based on the used product standard
2. Based on the declaration of the manufacturer, requestor or purchaser

Criterion A:

Definition: normal performance within limits specified by the manufacturer, requestor and purchaser.

The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

Criterion B:

Definition: temporary loss of function or degradation of performance which ceases after the disturbance ceases, and from which the equipment under test recovers its normal performance, without operator intervention.

After the test, the EUT shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacturer, when the EUT is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is allowed. However, no change of operating state or stored data is allowed to persist after the test. If the minimum performance level (or the permissible performance loss) is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the EUT if used as intended.

Criterion C:

Definition: temporary loss of function or degradation of performance, the correction of which requires operator intervention.

Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions. Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

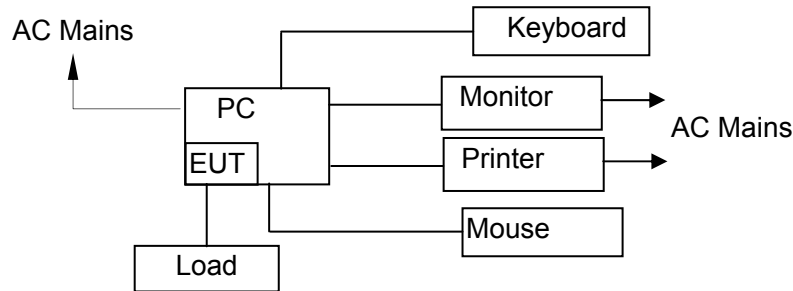
Criterion D

Definition: loss of function or degradation of performance, which is not recoverable, owing to damage to hardware or software, or loss of data.

9. ELECTROSTATIC DISCHARGE IMMUNITY TEST

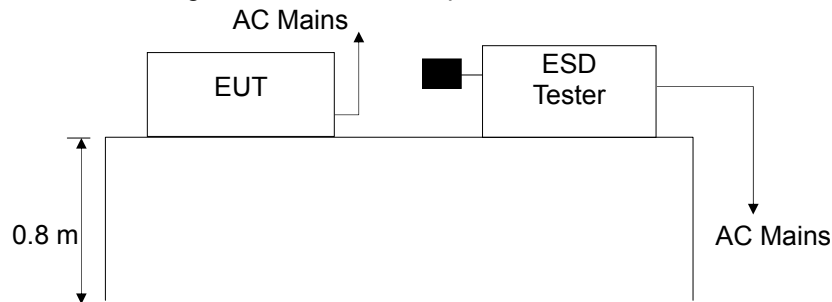
9.1. Block Diagram of Test Setup

9.1.1. Block diagram of connection between the EUT and simulators



(EUT: The IO motion control card)

9.1.2. Block diagram of ESD test setup



(EUT: The IO motion control card)

9.2. Test Standard

EN 61000-6-1:2007
 (IEC 61000-4-2:2008 Severity Level: 3 / Air Discharge: $\pm 8\text{kV}$
 Level: 2 / Contact Discharge: $\pm 4\text{kV}$)

9.3. Severity Levels and Performance Criterion

9.3.1. Severity level

| Level | Test Voltage Contact Discharge (kV) | Test Voltage Air Discharge (kV) |
|-------|--|------------------------------------|
| 1 | ± 2 | ± 2 |
| 2 | ± 4 | ± 4 |
| 3 | ± 6 | ± 8 |
| 4 | ± 8 | ± 15 |
| X | Special | Special |

9.3.2. Performance criterion: B

9.4. Operating Condition of EUT

- 9.4.1. Setup the EUT as shown on Section 9.1.
- 9.4.2. Turn on the power of all equipments.
- 9.4.3. Let the EUT work in test mode (ON) and test it.

9.5. Test Procedure

9.5.1. Air Discharge:

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

9.5.2. Contact Discharge:

All the procedure shall be same as Section 8.5.1. Except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

9.5.3. Indirect discharge for horizontal coupling plane

At least 10 single discharges (in the most sensitive polarity) shall be applied at the front edge of each HCP opposite the center point of each unit (if applicable) of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.

9.5.4. Indirect discharge for vertical coupling plane

At least 10 singles discharge (in the most sensitive polarity) shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m×0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

9.6. Test Results

PASS.

Please refer to the following page.

Electrostatic Discharge Test Result

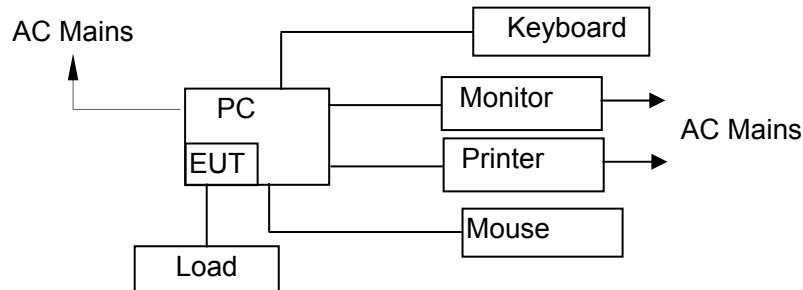
SHENZHEN EMTEK CO., LTD.

| | | | |
|-------------------|---|---------------|----------------------|
| Applicant | : SHENZHEN LEADSHINE TECHNOLOGY CO., LTD. | | |
| EUT | : The IO motion control card | Test Date | : September 11, 2013 |
| M/N | : IOC-0640 | Temperature | : 22°C |
| Power Supply | : AC 230V/50Hz | Humidity | : 50% |
| Air discharge | : ± 8.0kV | Test mode | : ON |
| Contact discharge | : ± 4.0kV | Criterion | : B |
| Test Engineer | : DK | | |
| Location | Kind A-Air Discharge C-Contact Discharge | Result | |
| Slot | A | A | |
| Port | C | A | |
| Metal | C | A | |
| HCP | C | A | |
| VCP of front | C | A | |
| VCP of rear | C | A | |
| VCP of left | C | A | |
| VCP of right | C | A | |
| | | | |
| | | | |
| | | | |
| | | | |
| Note: | | | |
| | | | |

10. RF FIELD STRENGTH SUSCEPTIBILITY TEST

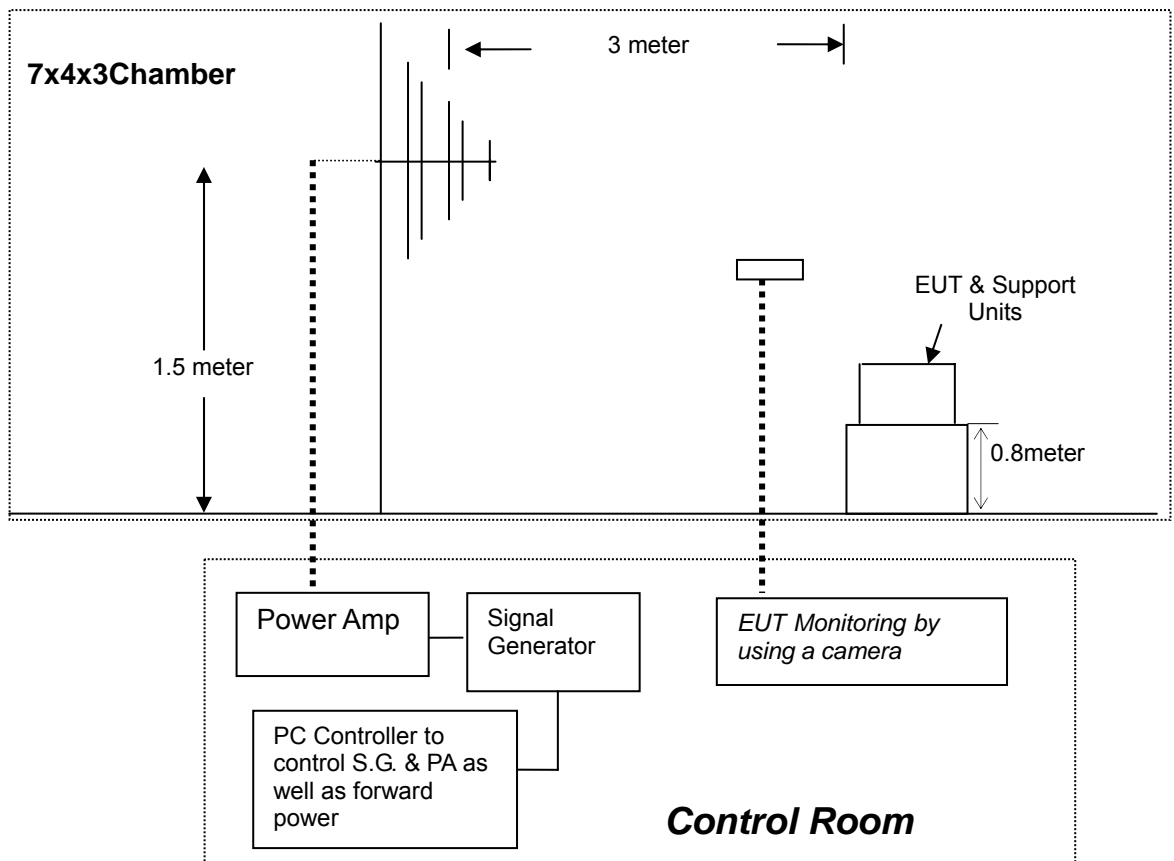
10.1. Block Diagram of Test Setup

10.1.1. Block diagram of connection between the EUT and simulators



(EUT: The IO motion control card)

10.1.2. Block diagram of RS test setup



(EUT: The IO motion control card)

10.2. Test Standard

EN 61000-6-1:2007
 (IEC 61000-4-3:2006+A1:2007+A2:2010, Severity Level: 1V / m, 3V / m)

10.3. Severity Levels and Performance Criterion

10.3.1. Severity Levels

| Level | Field Strength V/m |
|-------|--------------------|
| 1. | 1 |
| 2. | 3 |
| 3. | 10 |
| X | Special |

10.3.2. Performance Criterion: A

10.4. Operating Condition of EUT

- 10.4.1. Me Setup the EUT as shown on Section 10.1.
- 10.4.2. Turn on the power of all equipments.
- 10.4.3. Let the EUT work in test mode (ON) and test it.

10.5. Test Procedure

The EUT are placed on a table that is 0.8 meter high above the ground. The EUT is set 3 meters away from the transmitting antenna that is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna is set on test. Each of the four sides of the EUT must be faced this transmitting antenna and measured individually.

In order to judge the EUT performance, a CCD camera is used to monitor it. All the scanning conditions are as following:

| Condition of Test | Remark |
|---------------------------|---------------------------|
| 1. Fielded Strength | 1V/m (Severity Level 1) |
| 2. Radiated Signal | 3V/m (Severity Level 2) |
| 3. Scanning Frequency | Modulated |
| 4. Sweep time of radiated | 80-2700MHz |
| 5. Dwell Time | 0.0015 Decade/s 1 Sec. |

10.6. Test Results

PASS.

Please refer to the following page.

RF Field Strength Susceptibility Test Results

SHENZHEN EMTEK CO., LTD.

| | | | | |
|--|------------|--------------------------------------|------------|----------|
| Applicant : SHENZHEN LEADSHINE TECHNOLOGY CO., LTD. | | | | |
| EUT : The IO motion control card | | Test Date : September 11, 2013 | | |
| M/N : IOC-0640 | | Temperature : 22°C | | |
| Field Strength : 3 V/m | | Humidity : 50% | | |
| Power Supply : AC 230V/50Hz | | Criterion : A | | |
| Test Mode : ON | | Frequency Range : 80 MHz to 2000 MHz | | |
| Test Engineer : DK | | | | |
| Modulation: <input type="checkbox"/> None <input type="checkbox"/> Pulse <input checked="" type="checkbox"/> AM 1kHz 80% | | | | |
| Frequency Rang 1: 80~ 1000MHz | | Frequency Rang 2: 1400~ 2000MHz | | |
| Steps | 1% | | | |
| | Horizontal | Vertical | Horizontal | Vertical |
| Front | A | A | A | A |
| Right | A | A | A | A |
| Rear | A | A | A | A |
| Left | A | A | A | A |
| Test Equipment: 1. Signal Generator: 2023B (AEROFLEX) 2. Power Amplifier: AS0102-55 (MILMEGA) & AP32MT215 (PRANA) 3. Log.-Per. Antenna: VULP9118E (SCHWARZBECK) 4. Broad-Band Horn Antenna: BBHA 9120L3F (SCHWARZBECK) 5. RF Power Meter. Dual Channel: 4232A (BOONTON) 6. Field Strength Meter: HI-6005 (HOLADAY) | | | | |
| Note: | | | | |

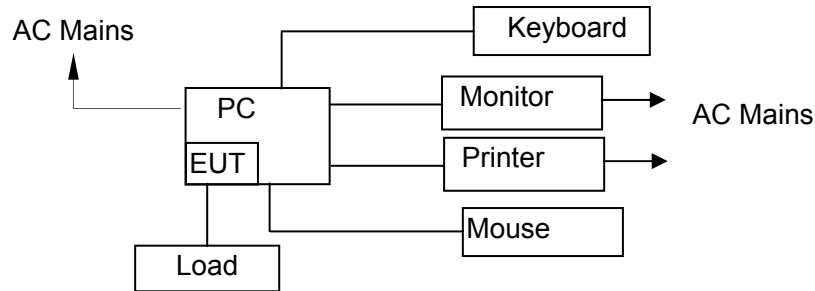
RF Field Strength Susceptibility Test Results

| | | | | |
|--|------------|---------------------------------------|------------|-----------------------|
| Applicant : SHENZHEN LEADSHINE TECHNOLOGY CO., LTD. | | | | |
| EUT : The IO motion control card | | Test Date : September 13, 2013 | | |
| M/N : IOC-0640 | | Temperature : 22°C | | |
| Field Strength : 1 V/m | | Humidity : 50% | | |
| Power Supply : AC 230V/50Hz | | Criterion : A | | |
| Test Mode : ON | | Frequency Range : 2000 MHz to2700 MHz | | |
| Test Engineer : SMQ | | | | |
| Modulation: <input type="checkbox"/> None <input type="checkbox"/> Pulse <input checked="" type="checkbox"/> AM 1kHz 80% | | | | |
| | | Frequency Rang 1: 2000~2700 MHz | | Frequency Rang 2: N/A |
| Steps | 1% | | | |
| | Horizontal | Vertical | Horizontal | Vertical |
| Front | A | A | | |
| Right | A | A | | |
| Rear | A | A | | |
| Left | A | A | | |
| | | | | |
| Note: Test in SMQ | | | | |

11. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

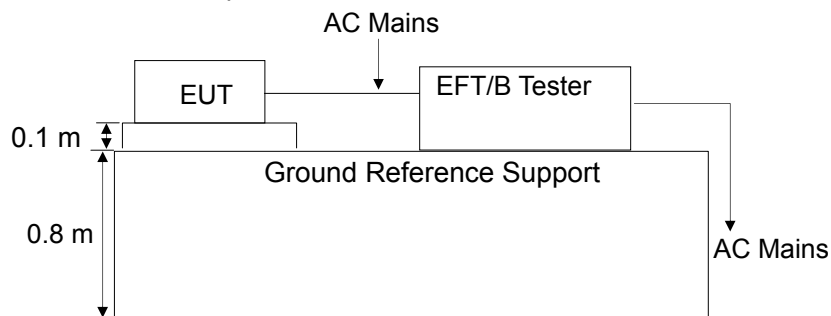
11.1. Block Diagram of Test Setup

11.1.1. Block Diagram of the EUT



(EUT: The IO motion control card)

11.1.2. EFT Test Setup



(EUT: The IO motion control card)

11.2. Test Standard

EN 61000-6-1:2007
 (IEC61000-4-4:2012, Severity Level: 2: 1kV)

11.3. Severity Levels and Performance Criterion

11.3.1. Severity level

| Level | Open Circuit Output Test Voltage $\pm 10\%$ | |
|-------|---|---|
| | On Power Supply Lines | On I/O (Input/Output) Signal data and control lines |
| 1 | 0.5 kV | 0.25 kV |
| 2 | 1 kV | 0.5 kV |
| 3 | 2 kV | 1 kV |
| 4 | 4 kV | 2 kV |
| X | Special | Special |

11.3.2. Performance criterion: B

11.4.Operating Condition of EUT

- 11.4.1.Me Setup the EUT as shown on Section 11.1.
- 11.4.2.Turn on the power of all equipments.
- 11.4.3.Let the EUT work in test mode (ON) and test it.

11.5.Test Procedure

The EUT is put on the table that is 0.8 meter high above the ground. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m.

11.5.1.For input and output AC power ports:

The EUT is connected to the power mains by using a coupling device that couples the EFT interference signal to AC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 mins.

11.5.2.For signal lines and control lines ports:

No I/O ports. It's unnecessary to test.

11.5.3.For DC output line ports:

It's unnecessary to test.

11.6.Test Results

PASS.

Please refer to the following page.

Electrical Fast Transient/Burst Test Results

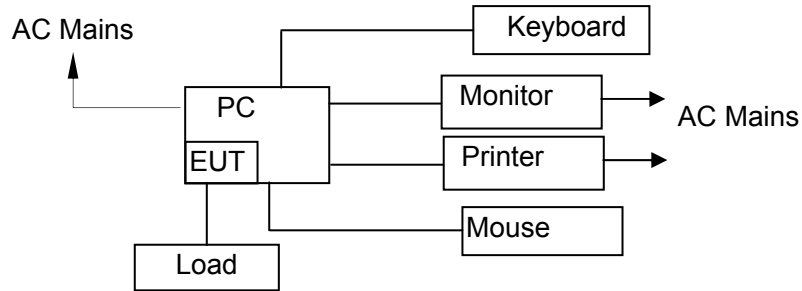
SHENZHEN EMTEK CO., LTD.

| | | | |
|---|--------------|--|-----------|
| Standard: <input checked="" type="checkbox"/> IEC 61000-4-4 | | Result: <input checked="" type="checkbox"/> PASS / <input type="checkbox"/> FAIL | |
| Applicant : <u>SHENZHEN LEADSHINE TECHNOLOGY CO., LTD.</u> | | | |
| EUT : <u>The IO motion control card</u> | | | |
| M/N : <u>IOC-0640</u> | | | |
| Input Voltage: <u>AC 230 V</u> | | | |
| Criterion : B | | | |
| Ambient Condition : <u>23 °C</u> | | <u>55% RH</u> | |
| Test Engineer: <u>DK</u> | | | |
| Operation Mode: ON | | | |
| Line : <input checked="" type="checkbox"/> AC Mains | | Line : <input type="checkbox"/> Signal <input type="checkbox"/> I/O Cable | |
| Coupling : <input checked="" type="checkbox"/> Direct | | Coupling : <input type="checkbox"/> Capacitive | |
| Test Time : 120s | | | |
| Line | Test Voltage | Result(+) | Result(-) |
| L | 1kV | A | A |
| N | 1kV | A | A |
| PE | | | |
| L、N | 1kV | A | A |
| L、PE | | | |
| N、PE | | | |
| L、N、PE | | | |
| Signal Line | | | |
| DC Line | | | |
| Note: | | | |

12. SURGE IMMUNITY TEST

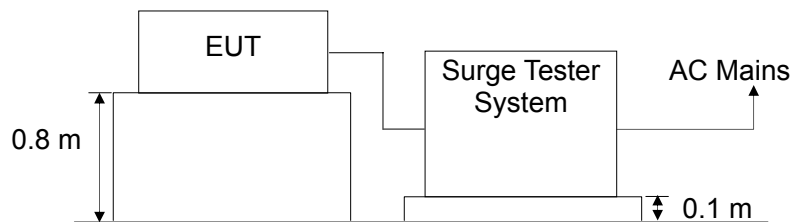
12.1. Block Diagram of Test Setup

12.1.1. Block Diagram of the EUT



(EUT: The IO motion control card)

12.1.2. Surge Test Setup



(EUT: The IO motion control card)

12.2. Test Standard

EN 61000-6-1:2007

(IEC 61000-4-5:2005, Severity Level: Line to Line: 1.0kV, Line to Earth: 2.0kV)

12.3. Severity Levels and Performance Criterion

12.3.1. Severity level

| Severity Level | Open-Circuit Test Voltage kV |
|----------------|---------------------------------|
| 1 | 0.5 |
| 2 | 1.0 |
| 3 | 2.0 |
| 4 | 4.0 |
| * | Special |

12.3.2. Performance criterion: B

12.4.Operating Condition of EUT

- 12.4.1.Me Setup the EUT as shown on Section 12.1.
- 12.4.2.Turn on the power of all equipments.
- 12.4.3.Let the EUT work in test mode (ON) and test it.

12.5.Test Procedure

- 1) Set up the EUT and test generator as shown on Section 12.1.2.
- 2) For line to line coupling mode, provide a 1.0 kV 1.2/50us voltage surge (At open-circuit condition) and 8/20us current surge to EUT selected points.
- 3) At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.
- 4) Different phase angles are done individually.
- 5) Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

12.6.Test Results

PASS.

Please refer to the following page.

Surge Immunity Test Result

SHENZHEN EMTEK CO., LTD.

Applicant : SHENZHEN LEADSHINE TECHNOLOGY CO., LTD.

EUT : The IO motion control card

Test Date : September 11, 2013

M/N : IOC-0640

Temperature : 22°C

Power Supply : AC 230V / 50Hz

Humidity : 50%

Test Mode : ON

Criterion : B

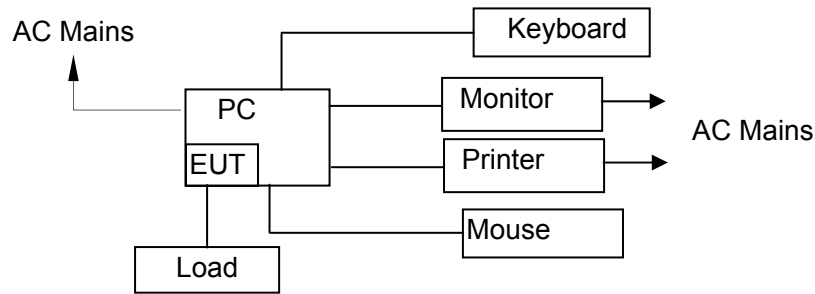
| Location | Polarity | Phase Angle | Number of Pulse | Pulse Voltage (kV) | Result |
|----------|----------|-------------|-----------------|--------------------|--------|
| L-N | + | 0° | 5 | 1.0 | A |
| | + | 90° | 5 | 1.0 | A |
| | + | 180° | 5 | 1.0 | A |
| | + | 270° | 5 | 1.0 | A |
| | - | 0° | 5 | 1.0 | A |
| | - | 90° | 5 | 1.0 | A |
| | - | 180° | 5 | 1.0 | A |
| | - | 270° | 5 | 1.0 | A |
| L-PE | + | 0° | 5 | 2.0 | A |
| | + | 90° | 5 | 2.0 | A |
| | + | 180° | 5 | 2.0 | A |
| | + | 270° | 5 | 2.0 | A |
| | - | 0° | 5 | 2.0 | A |
| | - | 90° | 5 | 2.0 | A |
| | - | 180° | 5 | 2.0 | A |
| | - | 270° | 5 | 2.0 | A |
| N-PE | + | 0° | 5 | 2.0 | A |
| | + | 90° | 5 | 2.0 | A |
| | + | 180° | 5 | 2.0 | A |
| | + | 270° | 5 | 2.0 | A |
| | - | 0° | 5 | 2.0 | A |
| | - | 90° | 5 | 2.0 | A |
| | - | 180° | 5 | 2.0 | A |
| | - | 270° | 5 | 2.0 | A |

Remark:

13.INJECTED CURRENTS SUSCEPTIBILITY TEST

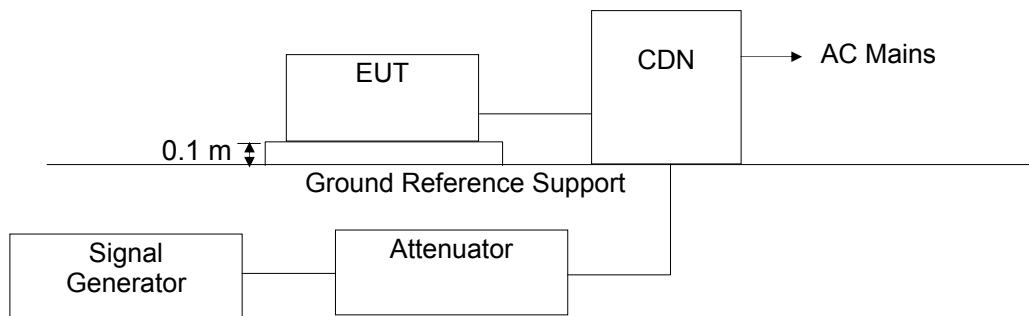
13.1.Block Diagram of Test Setup

13.1.1.Block Diagram of the EUT



(EUT: The IO motion control card)

13.1.2.Block Diagram of Test Setup



(EUT: The IO motion control card)

13.2.Test Standard

EN 61000-6-1:2007
 (IEC 61000-4-6:2008, Severity Level: Level 2, 3V (r.m.s.), 0.15MHz ~ 80MHz)

13.3.Severity Levels and Performance Criterion

13.3.1.Severity level

| Level | Field Strength V |
|-------|------------------|
| 1 | 1 |
| 2 | 3 |
| 3 | 10 |
| X | Special |

13.3.2.Performance criterion: A

13.4.Operating Condition of EUT

- 13.4.1.Me Setup the EUT as shown on Section 13.1.
- 13.4.2.Turn on the power of all equipments.
- 13.4.3.Let the EUT work in test mode (ON) and test it.

13.5.Test Procedure

- 1) Set up the EUT, CDN and test generators as shown on Section 13.1.2.
- 2) Let the EUT work in test mode and measure it.
- 3) The EUT are placed on an insulating support 0.1 m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).
- 4) The disturbance signal described below is injected to EUT through CDN.
- 5) The EUT operates within its operational mode(s) under intended climatic conditions after power on.
- 6) The frequency range is swept from 150kHz to80MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1kHz sine wave.
- 7) The rate of sweep shall not exceed 1.5×10^{-3} decades/s. where the frequency is swept incrementally; the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.
- 8) Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

13.6.Test Results

PASS.

Please refer to the following page.

Injected Currents Susceptibility Test Results

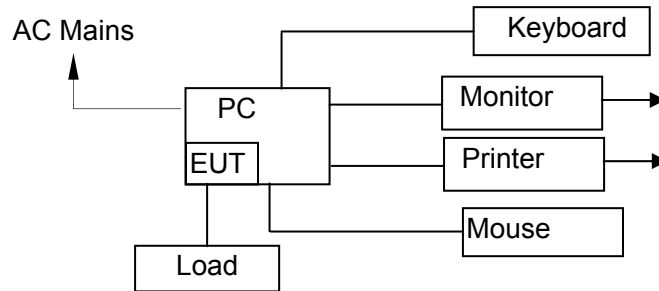
SHENZHEN EMTEK CO., LTD.

| Applicant : <u>SHENZHEN LEADSHINE TECHNOLOGY CO., LTD.</u> | | | | |
|--|-------------------|--------------------------------------|-----------|--------|
| EUT : <u>The IO motion control card</u> | | Test Date: <u>September 11, 2013</u> | | |
| M/N : <u>IOC-0640</u> | | Temperature : <u>23°C</u> | | |
| Power Supply : <u>AC 230V / 50Hz</u> | | Humidity : <u>50%</u> | | |
| Test Engineer : <u>DK</u> | | | | |
| Test Mode: <u>ON</u> | | | | |
| Frequency Range (MHz) | Injected Position | Strength (Unmodulated) | Criterion | Result |
| 0.15 ~ 80 | AC Mains | 3V | A | A |
| | | | | |
| Test Mode : <u>N/A</u> | | | | |
| Frequency Range (MHz) | Injected Position | Strength (Unmodulated) | Criterion | Result |
| | | | | |
| | | | | |
| Remark : 1. Modulation Signal:1kHz 80% AM Measurement Equipment : Simulator: CWS 500 (SWITZERLAND EMTEST) CDN : <input type="checkbox"/> CDN-M2 (SWITZERLAND EMTEST) <input checked="" type="checkbox"/> CDN-M3 (SWITZERLAND EMTEST) | | | Note: | |

14. MAGNETIC FIELD SUSCEPTIBILITY TEST

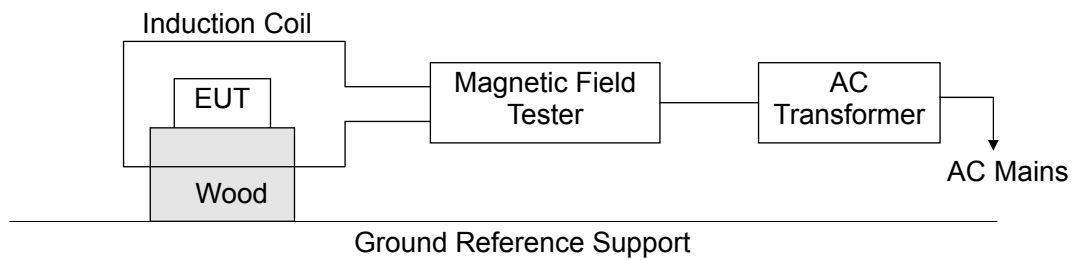
14.1. Block Diagram of Test Setup

14.1.1. Block diagram of the EUT



(EUT: The IO motion control card)

14.1.2. Magnetic field test setup



(EUT: The IO motion control card)

14.2. Test Standard

EN 61000-6-1:2007
 (IEC 61000-4-8:2009, Severity Level: Level 2, 3A / m)

14.3. Severity Levels and Performance Criterion

14.3.1. Severity Levels

| Level | Field Strength A/m |
|-------|--------------------|
| 1 | 1 |
| 2 | 3 |
| 3 | 10 |
| 4 | 30 |
| 5 | 100 |
| X | Special |

14.3.2. Performance Criterion: A

14.4.Operating Condition of EUT

- 14.4.1.Me Setup the EUT as shown on Section 14.1.
- 14.4.2.Turn on the power of all equipments.
- 14.4.3.Let the EUT work in test mode (ON) and test it.

14.5.Test Procedure

The EUT is placed in the middle of a induction coil (1*1m), under which is a 1*1*0.1m (high) table, this small table is also placed on a larger table, above the ground. Both horizontal and vertical polarization of the induction coil is set on test, so that each side of the EUT is affected by the magnetic field. Also can reach the same aim by change the position of the EUT.

14.6.Test Results

PASS.

Please refer to the following page.

Magnetic Field Immunity Test Result

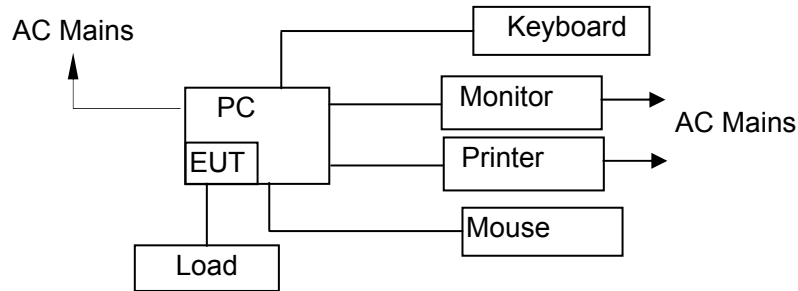
SHENZHEN EMTEK CO., LTD.

| | | | | |
|--|--|------------------|-----------|--------|
| Standard: <input checked="" type="checkbox"/> IEC 61000-4-8 | Result: <input checked="" type="checkbox"/> PASS / <input type="checkbox"/> FAIL | | | |
| Applicant : <u>SHENZHEN LEADSHINE TECHNOLOGY CO., LTD.</u> EUT : <u>The IO motion control card</u> M/N : <u>IOC-0640</u> Input Voltage : <u>AC 230V/50Hz</u> Date of Test : <u>September 11, 2013</u> Test Engineer: <u>DK</u> Ambient Condition : Temp : <u>22°C</u> Humid: <u>50%</u> Criterion: A Test Engineer: <u>DK</u> | | | | |
| Operation Mode: ON | | | | |
| Test Level (A/m) | Testing Duration | Coil Orientation | Criterion | Result |
| 3 | 5 mins | X | A | A |
| 3 | 5 mins | Y | A | A |
| 3 | 5 mins | Z | A | A |
| Operation Mode: N/A | | | | |
| Test Level (A/m) | Testing Duration | Coil Orientation | Criterion | Result |
| | | | | |
| | | | | |
| | | | | |
| Test Equipment | Magnetic Field Test: HEAFELY MAG 100.1 | | | |
| Note: | | | | |

15. VOLTAGE DIPS AND INTERRUPTIONS TEST

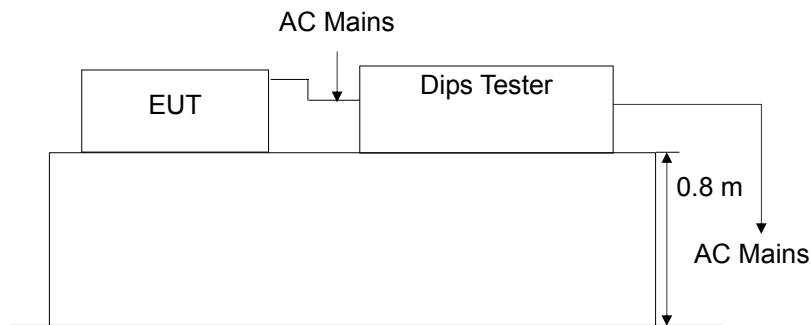
15.1. Block Diagram of Test Setup

15.1.1. Block Diagram of the EUT



(EUT: The IO motion control card)

15.1.2. Dips Test Setup



(EUT: The IO motion control card)

15.2. Test Standard

EN 61000-6-1:2007 (IEC 61000-4-11:2004)

15.3. Severity Levels and Performance Criterion

15.3.1. Severity level

| Test Level %UT | Voltage dip and short interruptions %UT | Duration (in period) |
|-------------------|---|-------------------------|
| 0 | 100 | 0.5 1 5 |
| 70 | 30 | 10 25 50 |
| 0 | 100 | * |

15.3.2. Performance criterion: B&C

15.4.Operating Condition of EUT

- 15.4.1.Me Setup the EUT as shown on Section 15.1.
- 15.4.2.Turn on the power of all equipments.
- 15.4.3.Let the EUT work in test mode (ON) and test it.

15.5.Test Procedure

- 1) Set up the EUT and test generator as shown on Section 15.1.2.
- 2) The interruption is introduced at selected phase angles with specified duration.
- 3) Record any degradation of performance.

15.6.Test Results

PASS.

Please refer to the following page.

Voltage Dips and Interruptions Test Results

SHENZHEN EMTEK CO., LTD.

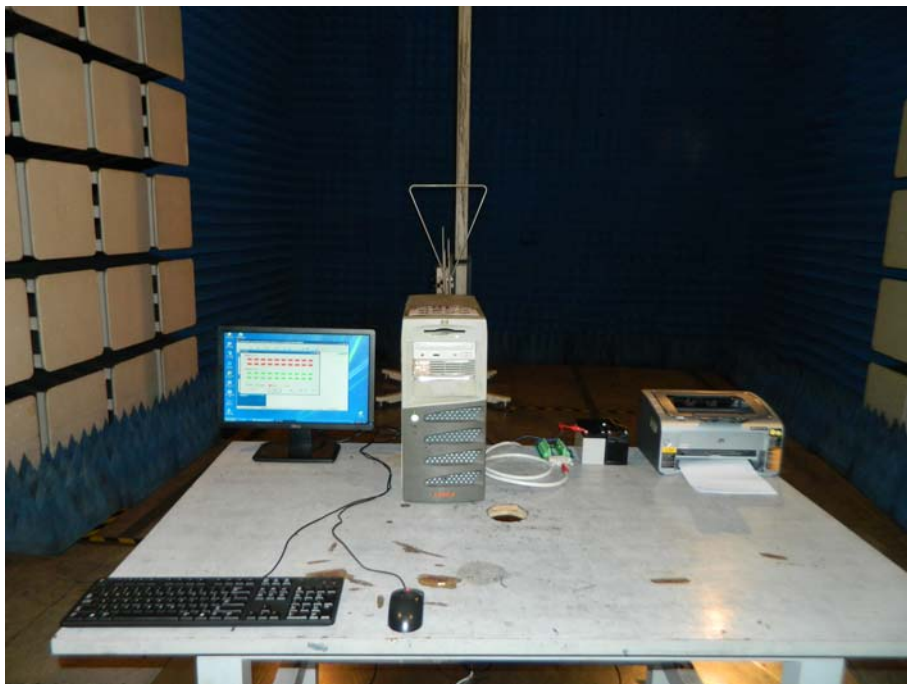
| Applicant : <u>SHENZHEN LEADSHINE TECHNOLOGY CO., LTD.</u> | | | | |
|--|--|-----------------------|---|----------------------------|
| EUT : <u>The IO motion control card</u> | | | Test Date : <u>September 11, 2013</u> | |
| M/N : <u>IOC-0640</u> | | | Temperature : <u>22°C</u> | |
| Power Supply : <u>AC 230V / 50Hz</u> | | | Humidity : <u>50%</u> | |
| Test Engineer: <u>DK</u> | | | | |
| Test Mode: ON | | | | |
| Test Level % U _T | Voltage Dips & Short Interruptions % U _T | Duration (in periods) | Criterion <input type="checkbox"/> A <input checked="" type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D | Result |
| 0 | 100 | 0.5P | B | A |
| 0 | 100 | 1P | B | A |
| 70 | 30 | 25P | C | A |
| 0 | 100 | 250P | C | C |
| Test Mode : <u>N/A</u> | | | | |
| Test Level % U _T | Voltage Dips & Short Interruptions % U _T | Duration (in periods) | Criterion <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D | Result P=PASS F=FAIL |
| | | | | |
| | | | | |
| | | | | |
| Note: Test level in 0%UT, duration 250P. EUT is stop working, but it can be resumed by itself after test | | | | |

16. PHOTOGRAPHS

16.1.Photo of Conducted Emission Measurement



16.2.Photo of Radiation Emission Measurement



16.3.Photo of Harmonic / Flicker Measurement



16.4.Photo of Electrostatic Discharge Test



16.5.Photo of RF Field Strength Susceptibility Test



16.6.Photo of Electrical Fast Transient / Burst Test



16.7.Photo of Surge Test



16.8.Photo of Injected Currents Susceptibility Test



16.9.Photo of Magnetic Field Immunity Test



16.10.Photo of Voltage Dips and Interruption Immunity Test



APPENDIX (Photos of EUT)

